

HYGIENE AND PUBLIC HEALTH

UNDER THE CHARGE OF

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The Etiology of Epidemic Poliomyelitis.—E. C. ROSENOW, E. B. TOWNE, and G. W. WHEELER (*Jour. Am. Med. Assn.*, October 21, 1916, lvii, No. 17) felt that a reinvestigation of the bacteriology of poliomyelitis by newer methods was desirable since Rosenow has shown by the use of special methods that the specific localizing power of bacteria is an important factor in the etiology of various diseases including those of the nervous system, and since Flexner and Noguchi found that the cultural conditions of the organisms with which they produced poliomyelitis in monkeys are "those that apply more particularly to the bacteria." A peculiar polymorphous streptococcus has been isolated often in large numbers from the throat, the tonsils, and from abscesses in the tonsils in a large number of cases of epidemic poliomyelitis. It has been obtained from the blood before and after death, from the brain and cord, and also from the intervertebral ganglia and lymph nodes in cases of this disease. The organism isolated produces on aerobic blood plates fine, dry, non-adherent, slightly green colonies, showing in forty-eight hours a narrow, hazy zone of hemolysis. On this medium and ascites-dextrose agar, the organisms are quite uniform in size but in ascites-dextrose broth, the organisms show polymorphous forms and in ascites-plain broth they are only about two-thirds the size. Old cultures show clumps of very small coccus forms. In a very few instances the early smears showed the tiny globoid bodies described by Flexner and Noguchi as present from cultures from tissues in poliomyelitis, but they also showed a number of medium-sized diplococci in chains which tend to grow smaller, so that at the end of twelve or fourteen days nothing but the tiny globoid bodies could be found. Transplants from these to another medium showed a marked tendency of the microorganisms to change their form according to the medium on which they were planted. Cultures of Berkefeld N. filtrate of emulsions of brain and cord of rabbits dead from paralysis following intravenous injection with suspensions of broth cultures of the large forms have grown into the characteristic polymorphous forms. In the liquid medium, during the early days of growth, chains are found which contain single members of all sizes and shapes. Paralysis with lesions in the central nervous system has been produced in guinea-pigs, rabbits, dogs, cats and monkeys by intravenous or intracerebral injection with this peculiar streptococcus in its large form from practically all of 52 cases of acute poliomyelitis. The incubation period in these animals was usually from three to five days.

The early paralysis were usually accompanied by evidence of pain in the affected extremity and the affected animals were apt to die within twenty-four hours of the onset. At necropsy the paralyzed animals showed hemorrhage and lesions in the brain and spinal cord, but noteworthy absence of these in other organs. In animals in which paralysis occurred early and which died soon after large injections, the large forms have only thus far been found, while in those which died after a long period of incubation, both large and small forms have been demonstrated. The same organism has been isolated from the brain and cord of paralyzed monkeys injected intracerebrally with fresh human virus of poliomyelitis. The authors state in conclusion "that the exact relation of our results to the facts already established as to the etiology of poliomyelitis cannot be definitely stated. It appears to us that the small filterable organism which has been generally accepted as the cause of poliomyelitis may be the form which this streptococcus tends to take under anaërobic conditions in the central nervous system and in suitable culture mediums, while the larger and more typically streptococcic forms which investigators have considered contaminations may be the identical organism grown larger under suitable conditions."

The Use of Insecticides against Lice.—BACOT (*Brit. Med. Jour.*, September 30, 1916, No. 2909) made an attempt, in performing these experiments, to arrange the conditions on as nearly natural a basis as was possible. In order to test the relative effects of contact and diffusion of several insecticides, an apparatus was designed consisting of wire gauze frames which could each be covered by a small gauze bag; each constituted a series of five small cages so arranged that they could be tied against the skin. In the central chamber was placed a 1-inch square of thick lint saturated with the substance to be tested, and lice were placed in all five of the chambers. Several gauze bags containing no insecticides were included as controls, which were placed between the others to ensure an interference of the substances tested with each other's action. These tests were usually of eight to twelve hours' duration. The substances tested were naphthalene, sulphur, cresylic acid, iodoform, vermigelli, a prepared insecticide, combinations of this with phenol and cresylic acid, a mixture of vaseline, naphthalene, kerosene and benzole and eytisine, an alkaloid having physiological properties similar to those of nicotin. The net results of these tests show that the diffusive effects of all the substances except possibly naphthalene is so slight as to reduce them all to contact remedies. Therefore, it is necessary to saturate or thoroughly dust underclothing with them to obtain any effect. If naphthalene is used in some form in which the garments can be impregnated with it, it is a very good insecticide and the chief objection which can be offered to it is the fact that it evaporates very rapidly. Tests were also made to investigate the effectiveness of remedies in preventing breeding when used to impregnate clothing. Flannel was saturated with the various remedies listed above, and the lice placed in contact with it for several hours in order that eggs might be laid and developed. In these tests an emulsion of soft soap and crude liquid carbolic acid was also used. This last was found to be the best remedy for impregnating clothing to prevent the spread of lice. Flannel was treated with the various remedies and, after two days, insects were placed in contact with it and the results noted.

In these tests also the emulsion of soft soap and carbolic was found to be the most effective, the practical effect of impregnation with it lasting about six or seven days and the smell have a slight effect for several days longer. Therefore a very practical insecticide for preventing the spread of lice among troops is an emulsion of 45 to 50 per cent. soft soap combined by heating with 50 to 55 per cent. crude carbolic. A 5 per cent. solution of the emulsion in warm water should be used to impregnate the garments, which should then be wrung and thoroughly dried before wearing.

Spontaneous Amebic Dysentery in Monkeys.—EICHORN and GALLAGHER (*Jour. Inf. Diseases*, September, 1916, xix, No. 3) describe a spontaneous outbreak of a disease in monkeys in which the lesions and protozoal organisms corresponded closely to those found in amebic dysentery in man. There is no record of any similar case, and there may be a possibility of transmission of the amebas to human beings and of animals being carriers of the parasites without showing any clinical evidence. In this outbreak 8 animals out of a total of 15 exposed succumbed, and of 9 developing symptoms only 1 recovered. These animals were spider monkeys, received at the National Zoological Park at different times from Central America. One of the monkeys was ill when it arrived, showing symptoms similar to those later manifested by the others. This animal died a month after arrival and in three months 8 of the other animals died of dysentery. The ameboid forms were especially numerous in liver abscesses but were also found in intestinal matter. They possessed motility for from twenty-four to thirty-six hours after the death of the animal in the liver specimens and then showed a tendency to assume a circular form, became more granular and smaller in size and appeared to be encysting. An attempt was made to transmit the disease to cats since it is generally understood that they are susceptible to *Ameba histolytica* but it was not successful, the cats remaining perfectly well. These experiments suggest that the parasite found is of a different species from that in man and is specific for the spider monkey. The cecum and colon were invariably the seat of pathogenic changes, the rectum being involved to a greater or less degree, and abscess of the liver was associated with the 2 cases showing the most extensive intestinal lesions. A study of the histological changes in the intestine showed ulceration of the mucosa but the other layers of the intestines were not greatly affected except in areas of deep ulceration. Microorganisms other than amebas were for the most part absent, as were the types of leukocytes usually present in microbial infections, and there was no pronounced congestion. In the liver tissue there were many necrotic foci varying in size and surrounded by amebas, and there was some congestion.

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